FIRST GRADE MATHEMATICS

GRADE LEVEL CONTENT EXPECTATIONS

1 MATH

v.6.04

NUMBER & OPERATIONS

ALGEBRA

MEASUREMENT

GEOMETRY

DATA & PROBABILITY

Welcome to a preview of Michigan's mathematical future! This document not only introduces Michigan's new Grade Level Content Expectations for mathematics, it also establishes high expectations in mathematics to better prepare all K-12 Michigan students for the challenges of the future.

Creating grade-level expectations involves a complex combination of understanding of mathematics, curriculum, student learning, teaching, current practices, and policy. Curriculum directors, mathematics educators, and classroom teachers from Michigan school districts across the state, together with mathematics and mathematics education faculty from universities across the state, have been involved in the development and/or review of the **Michigan Mathematics Grade Level Content Expectations.** The GLCE are intended to be usable as a framework for the development of grade-by-grade assessments, and to provide teachers with a guide for their instructional and curricular emphases in classrooms. The expectations were constructed to feature continuity from one grade to the next, and to ensure coherence both mathematically and pedagogically. These expectations represent a challenge toward which to aspire; in some cases, teachers and mathematics educators will be called on to move beyond their current practice and experience into territory that will be both demanding and rewarding. Michigan students can rise to the challenge of high academic standards. This document provides a set of ambitious goals for all of us.

This document is intended to be an assessment tool. This means students will be expected to be proficient in the concepts and skills included in this document at the end of the indicated grade level. These expectations are written to convey intended performances by students. The expectations here generally represent key landmarks in mathematics learning — areas where students are expected to have consolidated their understandings and skills. Thus it does not attempt to elaborate all of the precursor ideas and concepts that lead to a particular expectation in a particular grade level — it instead assumes that teachers will build up to the expectations through exploration and development of concepts and processes

The Grade Level Content Expectations are not designed to be a curriculum document, or to function as a scope and sequence framework. It is not designed to suggest the various pedagogical options and strategies that might best enable students to attain these expectations. Rather, it should serve as a basis for the development of a curriculum and instructional strategies that would help the students attain the concepts and skills necessary to meet the GLCE. Various groups are being organized

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to develop clarification documents, content examples, more elaborated explanations, and suggestions for professional development that would support these expectations. Ultimately, teachers, school personnel and district leaders will need to collaborate and draw on their own professional wisdom and experience, as well as on research, to decide how best to organize instruction to help their students meet these expectations.

The mathematics content expectations have been organized into five strands: Number and Operations, Algebra, Geometry, Measurement, and Data and Probability.

These expectations are being presented in two formats; one designed to show specific grade level expectations and a second to show how the expectations transition from one grade level to the next. In the **grade level** format the expectations are organized first by the five strands. Each of the strands is then broken down into content pieces titled "Topics" in an attempt to cluster related ideas for teaching continuity. Under each "Topic" are listed the expectations.

The second format is a "**cross-grade**" version, which has been designed with the intent that one grade level can be easily compared with another and to highlight the mathematical growth that is envisioned across the grades. This format also has been organized into the five strands. However, each strand has been subdivided into broader, more conceptual groupings called "Domains," to allow for cross grade comparison of the expectations. In several of the strands, the "domains" are similar to the "standards" in *Principles and Standards for School Mathematics* from the National Council of Teachers of Mathematics. In the "cross-grade" version, some key expectations are "cross-listed" in grey when they seem especially crucial to the development of another strand. For instance, several strands from the Number and Operations strand are also listed in grey in the Algebra strand.

Although this organization does not include what have typically been called "process" strands, the importance of mathematical process in the development of these proficiencies cannot be underestimated. Embedded within these expectations are emphases on representation, problem solving, and reasoning as appropriate. The importance of making mathematical connections is conveyed through the cross listing. Finally, the process of communication is foundational to all of mathematics learning.

With the cooperation of all those involved in the education of Michigan students, we can enable our young people to attain the highest standards – and thereby open doors for them to have fulfilling and successful lives in a quantitatively and technologically complex future.

FIRST GRADE

In the First Grade Expectations, children are asked to consolidate their counting knowledge, and to explore addition and subtraction as number operations. Work in Number and Operations will draw heavily on the use of concrete materials and contextual situations that make sense to children. Students should be fluent with addition and subtraction facts up to 10+10 by the end of first grade. Measurement is introduced through time and money, and geometric ideas are based on children's experiences in the real world.

NUMBER AND OPERATIONS

Count, write, and order numbers

N.ME.01.01 Count to 110 by 1's, 2's, 5's, and 10's, starting from any number in the sequence; count to 500 by 100s and 10s; use ordinals to identify position in a sequence, e.g., 1st, 2nd, 3rd.

N.ME.01.02 Read and write numbers to 110 and relate them to the quantities they represent.

N.ME.01.03 Order numbers to 110; compare using the phrases: same as, more than, greater than, fewer than; use = symbol. Arrange small sets of numbers in increasing or decreasing order, e.g., write the following from smallest to largest: 21, 16, 35, 8.

N.ME.01.04 Identify one more than, one less than, 10 more than, and 10 less than for any number up to 100.

N.ME.01.05 Understand that a number to the right of another number on the number line is bigger and that a number to the left is smaller.

N.ME.01.06 Count backward by 1's starting from any number between 1 and 100.

Explore place value

N.ME.01.07 Compose and decompose numbers to 30 including using bundles of tens and units, e.g., recognize 24 as 2 tens and 4 ones, 10 and 10 and 4, 20 and 4, and 24 ones.

Add and subtract whole numbers

N.ME.01.08 List number facts (partners inside of numbers) for 2 through 10; e.g., 8 = 7 + 1 = 6 + 2 = 5 + 3 = 4 + 4; 10 = 8 + 2 = 2 + 8.

N.MR.01.09 Compare two or more sets in terms of the difference in number of elements.

N.MR.01.10 Model addition and subtraction for numbers less than 20 for a given contextual situation using objects or pictures; explain in words; record using numbers and symbols; solve.

N.MR.01.11 Understand the inverse relationship between addition and subtraction, e.g., subtraction "undoes" addition: if 3 + 5 = 8, we know that 8 - 3 = 5 and 8 - 5 = 3; recognize that some problems involving combining, "taking away," or comparing can be solved by either operation.

N.FL.01.12 Know all the addition facts up to 10 + 10, and solve the related subtraction problems fluently.

N.MR.01.13 Apply knowledge of fact families to solve simple open sentences for addition and subtraction, such as: □ + 2 = 7 and 10 - □ = 6.

N.FL.01.14 Add three one-digit numbers.

N.FL.01.15 Calculate mentally sums and differences involving: a two-digit number and a one-digit number without regrouping; a two-digit number and a multiple of 10.

N.FL.01.16 Compute sums and differences up to two-digit numbers using number facts and strategies, but no formal algorithm.

MEASUREMENT

Estimate and measure length

M.UN.01.01 Measure the lengths of objects in non-standard units, (e.g., pencil lengths, shoe lengths) to the nearest whole unit.

M.UN.01.02 Compare measured lengths using the words shorter, shortest, longer, longest, taller, tallest, etc.

MEASUREMENT

Tell time

M.UN.01.03 Tell time on a twelve-hour clock face to the hour and half-hour.

Work with money

M.UN.01.04 Identify the different denominations of coins and bills.

M.UN.01.05 Match one coin or bill of one denomination to an equivalent set of coins/bills of other denominations, e.g., 1 quarter = 2 dimes and 1 nickel.

M.UN.01.06 Tell the amount of money: in cents up to $1, in dollars up to $100. Use the symbols $ and ¢.

M.PS.01.07 Add and subtract money in dollars only or in cents only.

Solve problems

M.PS.01.08 Solve one-step word problems using addition and subtraction of length, money and time, including "how much more/less", without mixing units.

GEOMETRY

Create and describe shapes

G.GS.01.01 Create common two-dimensional and three-dimensional shapes, and describe their physical and geometric attributes, such as color and shape.

G.LO.01.02 Describe relative position of objects on a plane and in space, using words such as above, below, behind, in front of.

Create and describe patterns involving geometric objects

G.SR.01.03 Create and describe patterns, such as repeating patterns, and growing patterns using number, shape, and size.

G.SR.01.04 Distinguish between repeating and growing patterns.

G.SR.01.05 Predict the next element in a simple repeating pattern.

G.SR.01.06 Describe ways to get to the next element in simple repeating patterns.

DATA AND PROBABILITY

Use pictographs

D.RE.01.01 Collect and organize data to use in pictographs.

D.RE.01.02 Read and interpret pictographs.

D.RE.01.03 Make pictographs of given data using both horizontal and vertical forms of graphs; scale should be in units of one and include symbolic representations, e.g., ☺ represents one child.